Contract # 059236

STATE OF UTAH CONTRACT

1. CONTRACTING PARTIES: This contract is between the following agency of the State of Utah:
Department of Transportation, Agency Code: 810, Division: Traffic & Safety, referred to as (STATE), and the following CONTRACTOR:

Anixter Inc.
Name

1837 South 4130 West Bldg. E
Address

Salt Lake City | **UT** | **84104**
City | State | Zip

LEGAL STATUS OF CONTRACTOR
[ ] Sole Proprietor
[ ] Non-Profit Corporation
[x] For-Profit Corporation
[ ] Partnership
[ ] Government Agency

Contact Person **Suzanne Cannon** Phone # **(801) 973-0302** Email: **Suzanne.cannon@anixter.com**
Federal Tax ID **#36-2361285** Vendor **#00193C** Commodity Code **28024000000**

2. **GENERAL PURPOSE OF CONTRACT**: **Requirements contract to provide the State with Traffic Signal Wire.**

3. **PROCUREMENT**: This contract is entered into as a result of the procurement process on RX#, **810-56-100**, FY **05** Bid# GL5033.

4. **CONTRACT PERIOD**: Effective date**: 01 April 2005** Termination date: **31 March 2008** unless terminated early or extended in accordance with the terms and conditions of this contract. Renewal Options: (if any): Two (2) One-year renewal options

5. **CONTRACT COSTS: See Attachment D for pricing.**

6. **ATTACHMENT A**: Division of Purchasing Standard Terms and Conditions
ATTACHMENT B: Specification – IMSA Wire Specification
ATTACHMENT C: Special Terms & Conditions
ATTACHMENT D: Pricing

Any conflicts between Attachment A and other Attachments will be resolved in favor of Attachment A.

7. **DOCUMENTS INCORPORATED INTO THIS CONTRACT BY REFERENCE BUT NOT ATTACHED**:
a. All other governmental laws, regulations, or actions applicable to the goods and/or services authorized by this contract.
b. Utah State Procurement Code, Procurement Rules, and CONTRACTOR'S response to Bid #**GL5033**, dated 16 February 2005.

IN WITNESS WHEREOF, the parties sign and cause this contract to be executed.

CONTRACTOR

Marcia Corrales — Date

Manager
Type or Print Name and Title

STATE

Kelvin Thacker, Procurement Manager — Date 3/14/05

Director, Division of Purchasing — Date APR 29 2005

CONTRACT RECEIVED AND PROCESSED BY DIVISION OF FINANCE — MAY 2 2005

Director, Division of Finance — Date

Tracie Montano	(801) 964-4534	(801) 965-4073	tmontano@utah.gov
Agency Contact Person	Telephone Number	Fax Number	Email Address

(Revision 08/26/2003)

ENT'D MAY 06 2005
MAY 06 2005

ATTACHMENT A: STANDARD TERMS AND CONDITIONS

1. **AUTHORITY:** Provisions of this contract are pursuant to the authority set forth in 63-56, Utah Code Annotated, 1953, as amended, Utah State Procurement Rules (Utah Administrative Code Section R33), and related statutes which permit the State to purchase certain specified services, and other approved purchases for the State.

2. **CONTRACT JURISDICTION, CHOICE OF LAW, AND VENUE:** The provisions of this contract shall be governed by the laws of the State of Utah. The parties will submit to the jurisdiction of the courts of the State of Utah for any dispute arising out of this Contract or the breach thereof. Venue shall be in Salt Lake City, in the Third Judicial District Court for Salt Lake County.

3. **LAWS AND REGULATIONS:** Any and all supplies, services and equipment furnished will comply fully with all applicable Federal and State laws and regulations.

4. **RECORDS ADMINISTRATION:** The Contractor shall maintain, or supervise the maintenance of all records necessary to properly account for the payments made to the Contractor for costs authorized by this contract. These records shall be retained by the Contractor for at least four years after the contract terminates, or until all audits initiated within the four years, have been completed, whichever is later. The Contractor agrees to allow State and Federal auditors, and State Agency Staff, access to all the records to this contract, for audit and inspection, and monitoring of services. Such access will be during normal business hours, or by appointment.

5. **CONFLICT OF INTEREST:** Contractor represents that none of its officers or employees are officers or employees of the State of Utah, unless disclosure has been made in accordance with 67-16-8, Utah Code Annotated, 1953, as amended.

6. **CONTRACTOR, AN INDEPENDENT CONTRACTOR:** The Contractor shall be an independent contractor, and as such, shall have no authorization, express or implied, to bind the State to any agreements, settlements, liability, or understanding whatsoever, and agrees not to perform any acts as agent for the State, except as herein expressly set forth. Compensation stated herein shall be the total amount payable to the Contractor by the State. The Contractor shall be responsible for the payment of all income tax and social security amounts due as a result of payments received from the State for these contract services. Persons employed by the State and acting under the direction of the State shall not be deemed to be employees or agents of the Contractor.

7. **INDEMNITY CLAUSE:** The Contractor agrees to indemnify, save harmless, and release the State OF UTAH, and all its officers, agents, volunteers, and employees from and against any and all loss, damages, injury, liability, suits, and proceedings arising out of the performance of this contract which are caused in whole or in part by the negligence of the Contractor's officers, agents, volunteers, or employees, but not for claims arising from the State's sole negligence.

8. **EQUAL OPPORTUNITY CLAUSE:** The Contractor agrees to abide by the provisions of Title VI and VII of the Civil Rights Act of 1964 (42USC 2000e) which prohibits discrimination against any employee or applicant for employment or any applicant or recipient of services, on the basis of race, religion, color, or national origin; and further agrees to abide by Executive Order No. 11246, as amended, which prohibits discrimination on the basis of sex; 45 CFR 90 which prohibits discrimination on the basis of age; and Section 504 of the Rehabilitation Act of 1973, or the Americans with Disabilities Act of 1990 which prohibits discrimination on the basis of disabilities. Also, the Contractor agrees to abide by Utah's Executive Order, dated March 17, 1993, which prohibits sexual harassment in the work place.

9. **SEPARABILITY CLAUSE:** A declaration by any court, or any other binding legal source, that any provision of this contract is illegal and void shall not affect the legality and enforceability of any other provision of this contract, unless the provisions are mutually dependent.

10. **RENEGOTIATION OR MODIFICATIONS:** This contract may be amended, modified, or supplemented only by written amendment to the contract, executed by the same persons or by persons holding the same position as persons who signed the original agreement on behalf of the parties hereto, and attached to the original signed copy of the contract.

11. **DEBARMENT:** The Contractor certifies that neither it nor its principals are presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction (contract), by any governmental department or agency. If the Contractor cannot certify this statement, attach a written explanation for review by the State. The Contractor must notify the State Director of Purchasing within 30 days if debarred by any governmental entity during the Contract period.

12. **TERMINATION:** Unless otherwise stated in the Special Terms and Conditions, this contract may be terminated, with cause by either party, in advance of the specified termination date, upon written notice being given by the other party. The party in violation will be given ten (10) working days after notification to correct and cease the violations, after which the contract may be terminated for cause. This contract may be terminated without cause, in advance of the specified expiration date, by either party, upon 90 days prior written notice being given the other party. On termination of this contract, all accounts and payments will be processed according to the financial arrangements set forth herein for approved services rendered to date of termination.

13. **NONAPPROPRIATION OF FUNDS:** The Contractor acknowledges that the State cannot contract for the payment of funds not yet appropriated by the Utah State Legislature. If funding to the State is reduced due to an order by the Legislature or the Governor, or is required by State law, or if federal funding (when applicable) is not provided, the State may terminate this contract or proportionately reduce the services and purchase obligations and the amount due from the State upon 30 days written notice. In the case that funds are not appropriated or are reduced, the State will reimburse Contractor for products delivered or services performed through the date of cancellation or reduction, and the State will not be liable for any future commitments, penalties, or liquidated damages.

14. **SALES TAX EXEMPTION:** The State of Utah's sales and use tax exemption number is E33399. The tangible personal property or services being purchased are being paid from State funds and used in the exercise of that entity's essential functions. If the items being purchased are construction materials, they will be converted into real property by employees of this government entity, unless otherwise stated in the contract.

15. **WARRANTY:** The contractor agrees to warrant and assume responsibility for all products (including hardware, firmware, and/or software products) that it licenses, contracts, or sells to the State of Utah under this contract for a period of one year, unless otherwise specified and mutually agreed upon elsewhere in this contract. The contractor (seller) acknowledges that all warranties granted to the buyer by the Uniform Commercial Code of the State of Utah apply to this contract. Product liability disclaimers and/or warranty disclaimers from the seller are not applicable to this contract unless otherwise specified and mutually agreed upon elsewhere in this contract. In general, the contractor warrants that: (1) the product will do what the salesperson said it would do, (2) the product will live up to all specific claims that the manufacturer makes in their advertisements, (3) the product will be suitable for the ordinary purposes for which such product is used, (4) the product will be suitable

for any special purposes that the State has relied on the contractor's skill or judgment to consider when it advised the State about the product, (5) the product has been properly designed and manufactured, and (6) the product is free of significant defects or unusual problems about which the State has not been warned. Remedies available to the State include the following: The contractor will repair or replace (at no charge to the State) the product whose nonconformance is discovered and made known to the contractor in writing. If the repaired and/or replaced product proves to be inadequate, or fails of its essential purpose, the contractor will refund the full amount of any payments that have been made. Nothing in this warranty will be construed to limit any rights or remedies the State of Utah may otherwise have under this contract.

16. **PUBLIC INFORMATION:** Contractor agrees that the contract will be a public document, and may be available for distribution. and Contractor gives the State express permission to make copies of the contract and/or of the response to the solicitation in accordance with the State of Utah Government Records Access and Management Act. The permission to make copies as noted will take precedence over any statements of confidentiality, proprietary information, copyright information, or similar notation.

17. **DELIVERY:** Unless otherwise specified in this contract, all deliveries will be F.O.B. destination with all transportation and handling charges paid by the Contractor. Responsibility and liability for loss or damage will remain with Contractor until final inspection and acceptance when responsibility will pass to the State except as to latent defects, fraud and Contractor's warranty obligations.

18. **ORDERING AND INVOICING:** All orders will be shipped promptly in accordance with the delivery schedule. The Contractor will promptly submit invoices (within 30 days of shipment or delivery of services) to the State. The State contract number and/or the agency purchase order number shall be listed on all invoices, freight tickets, and correspondence relating to the contract order. The prices paid by the State will be those prices listed in the contract. The State has the right to adjust or return any invoice reflecting incorrect pricing.

19. **PAYMENT:** Payments are normally made within 30 days following the date the order is delivered or the date a correct invoice is received, whichever is later. All payments to the Contractor will be remitted by mail unless paid by the State of Utah's Purchasing Card.

20. **PATENTS, COPYRIGHTS, ETC.:** The Contractor will release, indemnify and hold the State, its officers, agents and employees harmless from liability of any kind or nature, including the Contractor's use of any copyrighted or un-copyrighted composition, secret process, patented or un-patented invention, article or appliance furnished or used in the performance of this contract.

21. **ASSIGNMENT/SUBCONTRACT:** Contractor will not assign, sell, transfer, subcontract or sublet rights, or delegate responsibilities under this contract, in whole or in part, without the prior written approval of the State.

22. **DEFAULT AND REMEDIES:** Any of the following events will constitute cause for the State to declare Contractor in default of the contract: 1. Nonperformance of contractual requirements; 2. A material breach of any term or condition of this contract. The State will issue a written notice of default providing a ten (10) day period in which Contractor will have an opportunity to cure. Time allowed for cure will not diminish or eliminate Contractor's liability for damages. If the default remains, after Contractor has been provided the opportunity to cure, the State may do one or more of the following: 1. Exercise any remedy provided by law; 2. Terminate this contract and any related contracts or portions thereof; 3. Impose liquidated damages, if liquidated damages are listed in the contract; 4. Suspend Contractor from receiving future solicitations.

23. **FORCE MAJEURE:** Neither party to this contract will be held responsible for delay or default caused by fire, riot, acts of God and/or war which is beyond that party's reasonable control. The State may terminate this contract after determining such delay or default will reasonably prevent successful performance of the contract.

24. **PROCUREMENT ETHICS:** The Contractor understands that a person who is interested in any way in the sale of any supplies, services, construction, or insurance to the State of Utah is violating the law if the person gives or offers to give any compensation, gratuity, contribution, loan or reward, or any promise thereof to any person acting as a procurement officer on behalf of the State, or who in any official capacity participates in the procurement of such supplies, services, construction, or insurance, whether it is given for their own use or for the use or benefit of any other person or organization (63-56-73, Utah Code Annotated, 1953, as amended).

25. **CONFLICT OF TERMS:** Contractor Terms and Conditions that apply must be in writing and attached to the contract. No other Terms and Conditions will apply to this contract including terms listed or referenced on a Contractor's website, terms listed in a Contractor quotation/sales order, etc. In the event of any conflict in the contract terms and conditions, the order of precedence shall be: 1. State Standard Terms and Conditions; 2. State Special Terms and Conditions; 3. Contractor Terms and Conditions.

(Revision date: Nov 21, 2003)

TTACHMENT B: SPECIFICATION
TRAFFIC SIGNAL WIRE

1.0 GENERAL

1.1 Description Requirements contract to provide the state with Traffic SignalWire for use in construction of traffic signal, lighting, and ATMS systems. The Contract will be for a period of three (3) years with (2) One-year options.

1.2 References

1.2.1 International Municipal Signal Association (IMSA) Official Wire and Cable Specifications.

2.0 PRODUCT REQUIREMENTS

2.1 Traffic Signal Wire

2.1.1 Belden 8281 Precision Coaxial Cable (video); RG-59/U, 20 AWG
Shielded, Black Jacket

2.1.2 14 AWG, 2-conductor; IMSA Specification No. 50-2
Shielded, Stranded, Twisted Pair

2.1.3 14 AWG, 3-conductor; IMSA Specification No. 20-1
Stranded

2.1.4 14 AWG, 4-conductor; IMSA Specification No. 20-1
Stranded

2.1.5 14 AWG, 7-conductor; IMSA Specification No. 20-1
Stranded

2.1.6 14 AWG, 1-conductor; IMSA Specification No. 51-7
Stranded, Black Polyethylene Encasing Tube

2.1.7 14 AWG, 1-conductor; IMSA Specification No. 51-3
Stranded

2.1.8 8 AWG, 1-conductor; RHH-RHW-2, USE (XLP) STR BC 90C 600V
Stranded, Color: Black

2.1.9 AWG, 1-conductor; RHH-RHW-2, USE (XLP) STR BC 90C 600V
Stranded, Colors: Black, Red, White, or Green

2.1.10 4 AWG, 1-conductor; RHH-RHW-2, USE (XLP) STR BC 90C 600V
Stranded, Colors: Black, Red, or White

2.1.11 2 AWG, 1-conductor; RHH-RHW-2, USE (XLP) STR BC 90C 600V
Stranded, Colors: Black, Red, or White

2.1.12 1/0 AWG, 1-conductor; RHH-RHW-2, USE (XLP) STR BC 90C 600V
Stranded, Colors: Black, Red, or White

2.1.13 6 AWG, 1-conductor; Soft Drawn Solid Bare Copper

IMSA
SPEC. NO. 50-2
1997

INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC.
SPECIFICATION No. 50-2 1997
POLYETHYLENE INSULATED, POLYETHYLENE JACKETED SHIELDED LOOP DETECTOR LEAD-IN CABLE

1. SCOPE

This specification covers paired polyethylene insulated, polyethylene jacketed loop detector lead-in cable, rated 600 volts, for use in traffic signal installations. suitable for conduit installation in wet or dry locations.

2. GENERAL CONSTRUCTION

Cable under this specification shall be composed of stranded tinned copper conductors individually insulated with polyethylene compound. The insulated conductors shall be twisted into pairs and laid up in a compact cable form and an Aluminum Mylar tape applied around the pair. A drain wire will lay in the core interstice outside the Aluminum Mylar tape and under the polyethylene jacket.

3. CONDUCTORS

3.1 The conductors shall be fully annealed tinned copper and shall conform to the requirements of ASTM Designation B-33, latest revision.

3.2 The conductor size range #12 thru #18 AWG.

3.3 When stranded conductors are required they may be either concentric or bunch stranding and shall conform to the physical requirements specified in ASTM Designation B-8, latest revision, for concentric stranding or ASTM Designation B-174, latest revision, for bunch stranding except that requirements for dimension and permissible variations are not applicable.

3.4 The finished cable must meet the conductor direct current resistance (DCR) requirements as specified in Table 3.1 using the schedule for establishing maximum DCR per Table 3.2 when tested in accordance with Underwriters Laboratories, Inc. Standard U L 1581, Method 220.

TABLE 3.1.1
NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km)
AT 20 degree C (68 F) OF SOLID CONDUCTOR

Conductor Size, AWG	Solid Copper Uncoated		Coated	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
18	6.51	21.36	6.76	22.18
16	4.10	13.45	4.26	13.98
14	2.57	8.43	2.67	8.76
12	1.62	5.31	1.68	5.51

TABLE 3.1.2
NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km)
AT 20 degree C (68 F) OF STRANDED CONDUCTOR

Conductor Size, AWG	Stranded Copper Uncoated [B,C,D]		Coated B		Coated C	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
18	6.67	21.38	7.07	23.20	---	---
16	4.18	13.71	4.43	14.53	---	---
14	2.63	8.63	2.73	8.96	2.79	9.15
12	1.66	5.45	1.72	5.64	1.75	5.74

TABLE 3.2
SCHEDULE FOR ESTABLISHING MAXIMUM D C RESISTANCE
PER UNIT LENGTH OF COMPLETED CABLE

Cables with Conductors of Table 3.1

Cable Type	Maximum D C Resistance
Single conductor	Table 3.1 Value plus 2 %
Multiple Conductor Cables and Twisted	Table 3.1 value plus 2 % plus one of the following:
Assemblies of single conductor cables	2 % - One Layer of Conductors (R Max = R x 1.02 x 1.02) 3 % - More than one layer of conductors (R Max = R x 1.02 x 1.03) 4 % - Pairs or other precabled units (R Max = R x 1.02 x 1.04)

4. INSULATION

Each conductor shall be covered with heat stabilized high molecular, low density polyethylene compound with a Minimum Average thickness of 30 mils (.76 mm). The insulating material shall meet the requirements of ASTM Designation D-1248B, latest revision, Type 1, Class B, Grade 4.

5. CONDUCTOR COLOR CODE

The color code of the insulated conductors shall be (1) natural(clear) and one(1) Black.

6. TWISTING

The insulated conductors shall be twisted into a pair with a maximum length of lay of 4.0 inches(102 mm).

7. CABLE TAPE

The conductor assembly shall be completely covered with a spirally wrapped Aluminum Mylar tape with the aluminum side out.

8. DRAIN WIRE

A stranded, tinned, copper drain wire shall lay in the core interstice outside the core tape against the aluminum side of the tape and shall be two sizes less than the conductor gauge.

TABLE 8.1

Conductor Size, AWG	Drain Wire Size, AWG
12	14
14	16
16	18
18	20

9. JACKET

The conductor assembly shall be covered with a continuous layer of black, unless otherwise specified, jacketing grade high molecular weight, low density polyethylene material having a Minimum Average thickness of 30 mils (.76 mm). The jacketing material shall meet the requirements of ASTM Designation D-1248, Type 1, Class C, Grade 5, J-3 latest revision.

10. IDENTIFICATION

Each shipping length of cable shall show the name of the manufacturer, the year of manufacture, the IMSA Specification number and the voltage rating of the cable on a tape under the outer jacket.

11. PACKING AND MARKING FOR SHIPMENT

Reels shall be substantially constructed and in good condition with drum diameters sufficient to prevent damage to the cable shipped on it. The cable shall be suitably protected. Each end of the cable shall be available for testing, properly sealed and protected against injury. Each reel shall be plainly and permanently marked with the manufacturer's full description of the cable, giving the type and length of cable on the reel, the number and size of the conductors in the cable and the voltage rating.

12. SAMPLING, INSPECTION AND ACCEPTANCE

12.1 General

A. Inspection and tests shall be made prior to shipment and at the place of manufacture.

B. The manufacturer shall furnish the purchaser in suitable form a certified report of the test made on the cable to show compliance with this specification.

C. If the purchaser prefers factory inspection by his own inspector, this shall be indicated by the purchaser when placing the order and the manufacturer shall notify the purchaser sufficiently in advance of the completion of the cable to permit arrangement for the purchaser's representative to be present at the inspection.

D. The manufacturer shall afford the inspector, without charge, all reasonable facilities to satisfy him that the cable is being furnished in accordance with this specification.

E. The purchaser, at his option, may make various tests on samples in his own laboratory or elsewhere, but such tests shall be made at the expense of the purchaser.

12.2 Tests

A. The finished jacket shall offer environmental stress resistance, outdoor weatherability, toughness, low temperature performance and ultraviolet resistance.

B. The polyethylene insulated wire shall be subject to a 3000 volt AC Spark Test during the extrusion process.

C. The high molecular weight polyethylene jacket shall be subject to a 3000 volt DC or Volt AC Spark test during the extrusion process.

D. Each length of completed cable shall be capable of withstanding without break down, the following dielectric tests:

1. 1.5 KVAC for 1 minute-each conductor to conductor.
2. 1.5 KVAC for 1 minute-all conductors to shield.

E. Each length of finished cable shall be free from opens, shorts and grounds. Discontinuities in conductor insulation due to injuries may be injuries and all lengths of insulated conductor containing such repaired sections shall conform to the electrical requirements of this specification. No repairs or defects in the jacket are allowed.

F. Sample Tests- One sample for establishing conformity to this specification shall be taken from each 10,000 feet (3048 M) or fraction thereof, of finished cable except that for physical dimensions and visual inspection a sample shall be taken from each reel. In case that these samples fail to meet the requirements of this specification, two additional samples selected from new cable lengths and the lot shall be accepted if retests are both satisfactory. However, in case of any failure on the retests the lot shall be rejected. The manufacturer may re-examine rejected material and submit it for re-inspection at his option.

13. GUARANTEE

The manufacturer of cable under this specification shall agree to replacement of any length of cable found to be defective in workmanship or material within one year from the date of delivery to the user.

IMSA
SPEC. NO. 20-1
1997

INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC.
SPECIFICATION No. 20-1 1997
POLYETHYLENE INSULATED, POLYETHYLENE JACKETED SIGNAL CABLE

1. SCOPE

This specification covers polyethylene insulated, polyethylene jacketed signal cables, rated 600 volts, for use in underground conduit or as aerial cable supported by a messenger, or for installation in raceways in buildings, not including trays, either as fire protective signaling cable or as traffic signal cable suitable for use in either wet or dry locations.

2. GENERAL CONSTRUCTION

Cable under this specification shall be composed of copper conductors individually insulated with heat-stabilized polyethylene. The insulated conductors shall be laid up in a compact cable form and bound with suitable tape. The cable core shall be enclosed with a tight fitting polyethylene compound jacket.

3. CONDUCTORS

3.1 The conductors shall be copper and shall, before insulating, conform to the requirements of ASTM Designation B-3, latest revision, except that requirements for dimension and permissible variations are not applicable.

3.2 The conductors shall be solid unless otherwise specified by the purchaser.

3.3 When stranded conductors are required they may be either concentric or bunch stranding and shall conform to the physical requirements specified in ASTM Designation B-8, latest revision, for concentric stranding or ASTM Designation B-174, latest revision, for bunch stranding except that requirements for dimension and permissible variations are not applicable.

3.4 The number and size of the conductors shall be specified by the purchaser.

3.5 The finished cable must meet the conductor direct current resistance (DCR) requirements as specified in Table 3.1 using the schedule for establishing maximum DCR per Table 3.2 when tested in accordance with Underwriters Laboratories, Inc. Standard U L 1581, Method 220.

TABLE 3.1.1

NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km) AT 20 degree C (68 F) OF SOLID CONDUCTOR

Conductor Size, AWG	Solid Copper Uncoated		Coated	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
22	16.5	54.14	17.2	56.43
20	10.3	33.79	10.7	35.11
19	8.20	26.90	8.52	27.95
18	6.51	21.36	6.76	22.18
16	4.10	13.45	4.26	13.98
14	2.57	8.43	2.67	8.76
12	1.62	5.31	1.68	5.51
10	1.02	3.35	1.06	3.48
8	0.640	2.10	0.659	2.16

TABLE 3.1.2

NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km) AT 20 degree C (68 F) OF STRANDED CONDUCTOR

Conductor Size, AWG	Stranded Copper Uncoated [B,C,D]		Coated B		Coated C	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
22	16.7	54.79	17.9	58.73	...	...
20	10.5	34.45	11.1	36.42	...	...
19	8.33	27.33	8.83	28.97	...	...
18	6.67	21.38	7.07	23.20	...	...
16	4.18	13.71	4.43	14.53	...	...
14	2.63	8.63	2.73	8.96	2.79	9.15
12	1.66	5.45	1.72	5.64	1.75	5.74
10	1.04	3.41	1.08	3.54	...	...
8	0.652	2.14	0.678	2.22	...	...

TABLE 3.2

SCHEDULE FOR ESTABLISHING MAXIMUM D C RESISTANCE PER UNIT LENGTH OF COMPLETED CABLE

Cables with Conductors of Table 3.1

Cable Type	Maximum D C Resistance
Single conductor	Table 3.1 Value plus 2 %
Multiple Conductor Cables and Twisted	Table 3.1 value plus 2 % plus one of the following:
Assemblies of single conductor cables	2 % - One Layer of Conductors (R Max = R x 1.02 x 1.02) 3 % - More than one layer of conductors (R Max = R x 1.02 x 1.03) 4 % - Pairs or other precabled units (R Max = R x 1.02 x 1.04)

4. INSULATION

4.1 The insulating compounds shall be polyethylene.

4.2 The insulation shall be applied concentrically about the conductor. The thickness of the insulation shall be not less than that specified in Table 4.2. The method of measurement and the apparatus used shall be in accordance with Underwriters Laboratories, Inc. Standard UL 62 (ANSI C33.1).

TABLE 4.2
INSULATION THICKNESS

Conductor Size, AWG	Minimum Acceptable Average Thickness	Minimum Acceptable Thickness at any pt
20-14	25 mils(.635 mm)	22 mils(.569 mm)
13-8	30 mils(.762 mm)	27 mils(.686 mm)

4.3 The insulation after application to the conductors shall comply with the requirements specified for Class 30 Thermoplastic Polyethylene compound in Underwriters Laboratories, Inc. Standard UL 62 (ANSI C33.1), except that the temperature for the Cold Bend test shall be -55.0+-2.0 degree C (-67.0 +-3.6 degree F).

4.4 The insulation of the finished conductors before cabling shall withstand without break down the application of a 60 or 3000 Hertz, 7500 volt essentially sinusoidal spark test potential (RMS) in accordance with the method and using equipment specified in Underwriters Laboratories, Inc. Standard UL 83 (ANSI C33.8).

5. CONDUCTOR COLOR CODING

5.1 Standard color coding for cables shall be in accordance with Table 5.1. When permitted by the purchaser, the conductor coding may be numerals and words printed on the conductor insulation. Base colors shall be obtained by the use of colored insulation Tracers shall be colored stripes or bands which are part of or firmly adhered to the surface of the insulation in such a manner as to afford distinctive circuit coding throughout the length of each wire. Tracers may be in continuous or broken lines, such as a series of dots or dashes, and shall be applied longitudinally, annularly, spirally or in other distinctive patterns.

TABLE 5.1
CONDUCTOR COLORS AND SEQUENCE FOR CABLES

Conductor No.	Base Color	Tracer Color
1	Black	
2	White	
3	Red	
4	Green	
5	Orange	
6	Blue	
7	White	Black
8	Red	Black
9	Green	Black
10	Orange	Black
11	Blue	Black
12	Black	White
13	Red	White
14	Green	White
15	Blue	White
16	Black	Red
17	White	Red
18	Orange	Red
19	Blue	Red
20	Red	Green
21	Orange	Green

5.2 The color sequence may be repeated as necessary. Color code sequence applies when cable is composed of mixed sizes.

5.3 For combination cables consisting of pairs and single conductors, the color code sequence given in Table 5.2 IMSA Specification 19-2 shall be used for the pairs, repeated as necessary.

6. CONDUCTOR ASSEMBLY

6.1 Two Conductor Cable

A. Two conductor cable shall be of the round twisted type with a maximum length of lay not more than 30 times the insulated conductor diameter.

B. Fillers shall be used when necessary to form a round cable.

6.2 Multi-conductor cables having more than two conductors

A. In multi conductor cables having more than two conductors, the single conductors shall be laid up symmetrically in layers with lay not exceeding the following:

No. of Conductors	Maximum length of lay
3	35 times insulated conductor diameter
4	40 times insulated conductor diameter
5 or more	15 times the assembled core diameter

B.1 The outer layer shall be left hand lay.

B.2 OR The direction of lay may be changed at intervals throughout the length of the cable. The intervals need not be uniform. In the cable in which the lay is reversed (1) each area in which the lay is right or left hand for several (typically 10) complete twists (full 360 degree cycles) shall have the insulated conductors cabled with a length of lay that is not greater than specified in paragraph 6.2.A and (2) the length of each lay-transition zone (oscillated section) between these areas of right and left lay shall not exceed 1.8 times the maximum length of lay indicated in Par. 6.2.A.

C. Fillers shall be used when necessary to secure a uniform assembly of conductors or a firm, compact cylindrical core.

7. FILLERS

Filler, when used, shall be of a non-metallic, moisture resistant, non-wicking material which shall have no injurious effect upon the other component parts of the cable. The filler shall not wick when the cable is tested as follows: One inch (25.4 mm) of the jacket shall be removed from one end of a one foot (30.48 cm) length of cable. This end shall be vertically supported in a two inch (50.80 mm) deep dye (Gentian Violet or equivalent) and water solution for 24 hours. The dye shall not have visibly colored the top end of the cable.

8. CABLE TAPE

The conductor assembly shall be covered with a wrapping of a moisture-resistant tape applied so as to lap at least 10 % of its width.

9. JACKET

9.1 The taped conductor assembly shall be covered with a tight fitting black thermoplastic polyethylene compound jacket suitable for exposure to sunlight, atmospheric temperature and stresses reasonably expected in normal installations.

9.2 The jacket shall be applied tightly over the core assembly and it shall be smooth, free from holes, splits, blisters and any other imperfections. The jacket material shall meet the requirements of Table 9.2.

TABLE 9.2
PHYSICAL PROPERTIES OF POLYETHYLENE JACKET

Property	Test Method	Requirements
Tensile Strength	ASTM D2633,latest revision	1700 Psi Min. (11.72 MPa Min.)
Elongation	ASTM D2633,latest revision	400 % Min.
Cold Bend	ASTM D2633,at -55.0+-1.0 C	No Cracks
Environmental Cracking	ASTM D1693,latest revision	No Cracks
Absorption Coefficient	ASTM D3349.latest revision	3200*

***Certification of Compliance with this requirement issued by the manufacturer of the polyethylene compound shall suffice in lieu of testing of the finished cable jacket.**

9.3 The thickness of the jacket shall be as specified in Table 9.3. The method of measurement and the apparatus used shall be in accordance with Underwriters Laboratories, Inc. Standard UL 62 (ANSI C33.1).

TABLE 9.3
JACKET THICKNESS

Core Diameter under Jacket		Minimum Acceptable Average Thickness		Minimum Acceptable Thickness at any pt	
inch	Mm	mil	Mm	mil	Mm
0.0-0.425	0.0-10.795	45	1.143	36	.914
0.426-0.700	10.820-17.780	60	1.524	48	1.219
0.701-1.500	17.805-38.100	80	2.032	64	1.626
1.501-2.500	38.125-63.500	110	2.794	88	2.235
2.501 & up	63.525 & up	140	3.556	112	2.845

10. IDENTIFICATION

Each shipping length of cable shall show the name of the manufacturer, the year of manufacture, the IMSA Specification number an the voltage rating of the cable. The above information shall be applie every two feet (60.96 cm) or less to the outer surface of the jacket b indent printing.

11. PACKING AND MARKING FOR SHIPMENT

Reels shall be substantially constructed and in good condition wit drum diameters sufficient to prevent damage to the cables shipped o it. The cables shall be suitably protected. Each end of the cable sha be available for testing, properly sealed and protected against injur Each reel shall be plainly and permanently marked with the manufac turer's full description of the cable, giving the type and length of th cable on the reel, the number and size of conductors in the cable an the voltage rating.

12. SAMPLING, INSPECTION AND ACCEPTANCE

12.1 General

A. Inspection and tests shall be made prior to shipment and at the place of manufacture.

B. The manufacturer shall furnish the purchaser in suitable form a certified report of the test made on the cable to show compliance with this specification.

C. If the purchaser prefers factory inspection by his own inspector, this shall be indicated by the purchaser when placing the order and the manufacturer shall notify the purchaser sufficiently in advance of the completion of the cable to permit arrangement for the purchaser's representative to be present at the inspection.

D. The manufacturer shall afford the inspector without charge, all reasonable facilities to satisfy him that the cable is being furnished in accordance with this specification.

E. The purchaser, at his option, may make various tests on samples in his own laboratory or elsewhere, but such tests shall be made at the expense of the purchaser.

12.2 Tests

A. Tests on the finished conductors- Each finished conductor shall meet the spark test requirement of paragraph 4.4 as soon as possible prior to cabling. All spark test failures shall be repaired before cabling.

B. Tests on the finished Cable- The individual conductors of each length of completed cable shall withstand without break down (1) the application for one minute of a 60 Hertz, 2500 volt essentially sinusoidal test potential (RMS) in accordance with the method and using the equipment specified in Underwriters Laboratories, Inc. Standard UL 83(ANSI C33.8) or (2) a DC Test which shall be a short duration (5 second minimum) application of a DC voltage of ten times the Voltage Rating of the cable. Each conductor shall be tested against all other conductors and shield if present.

C. Sample Tests- One sample for establishing conformity to this specification shall be taken from each 10,000 feet (3.0 km) or fraction thereof, of each type and size of finished cable except that for physical dimensions and visual inspection a sample shall be taken from each reel. In case that these samples fail to meet the requirements of this specification, two additional lengths shall be selected from new cable lengths and the lot shall be accepted if retests are both satisfactory. However, in case of any failure on the retest, the lot shall be rejected. The manufacturer may re-examine rejected material and submit it for re-inspection at his option.

13. GUARANTEE

The manufacturer of cable under this specification shall agree to the replacement of any length of cable found to be defective in workmanship or material within one year from the date of delivery to the user.

INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC.
SPECIFICATION No. 51-7 1997
CROSS-LINKED POLYETHYLENE INSULATED , LOOSELY ENCASED IN A POLYVINYL CHLORIDE OR POLYETHYLENE TUBE LOOP DETECTOR WIRE

1. SCOPE

This specification covers cross-linked polyethylene insulated conductor loosely encased in either a polyvinyl chloride or a polyethylene tube rated at 600 volts for use as a inductance loop detector wire.

2. GENERAL CONSTRUCTION

Wire under this specification shall be composed of 19 strand conductor insulated by a cross-linked polyethylene compound. The wire shall be loosely encased in a tube of either polyvinyl chloride or polyethylene compound.

3. CONDUCTOR

3.1 The conductor shall be copper and shall, before insulating, conform to the requirements of ASTM Designation B-3, latest revision, except that requirements for dimension and permissible variations are not applicable.

3.2 The conductor shall be 19 strand.

3.3 The stranded conductor may be either concentric or bunch stranding and shall conform to the physical requirements specified in ASTM Designation B-8, latest revision, for concentric stranding or ASTM Designation B-174, latest revision, for bunch stranding except that requirements for dimension and permissible variations are not * applicable.

3.4 The size of the conductor shall be either 12 AWG or 14 AWG.

3.5 The finished cable must meet the conductor direct current resistance (DCR) requirements as specified in Table 3.1 using the schedule for establishing maximum DCR per Table 3.2 when tested in accordance with Underwriters Laboratories, Inc. Standard U L 1581, Method 220.

TABLE 3.1.1
NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km) AT 20 degree C (68 F) OF SOLID CONDUCTOR

Conductor Size, AWG	Solid Copper Uncoated		Coated	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
14	2.57	8.43	2.67	8.76
12	1.62	5.31	1.68	5.51

TABLE 3.1.2
NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km) AT 20 degree C (68 F) OF STRANDED CONDUCTOR

Conductor Size, AWG	Stranded Copper Uncoated [B,C,D]		Coated B		Coated C	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
14	2.63	8.63	2.73	8.96	2.79	9.15
12	1.66	5.45	1.72	5.64	1.75	5.74

TABLE 3.2
SCHEDULE FOR ESTABLISHING MAXIMUM D C RESISTANCE PER UNIT LENGTH OF COMPLETED CABLE

Cables with Conductors of Table 3.1

Cable Type	Maximum D C Resistance
Single conductor	Table 3.1 Value plus 2 %
Multiple Conductor Cables and Twisted	Table 3.1 value plus 2 % plus one of the following:
Assemblies of single conductor cables	2 % - One Layer of Conductors (R Max = R x 1.02 x 1.02) 3 % - More than one layer of conductors (R Max = R x 1.02 x 1.03) 4 % - Pairs or other precabled units (R Max = R x 1.02 x 1.04)

4. INSULATION

4.1 The insulating compound shall be cross-linked polyethylene (ASTM D-2655-80)

4.2 The insulation shall be applied concentrically about the conductor. The thickness of the insulation shall be not less than that specified in Table 4.2. The method of measurement and apparatus used shall be in accordance with Underwriters Laboratories, Inc. Standard UL 1581.

TABLE 4.2
INSULATION THICKNESS

Conductor Size, AWG	Minimum Acceptable Average Thickness	Minimum Acceptable Thickness at any point
12 or 14	30 mils(.76 mm)	26 mils (.66 mm)

4.3 The insulation after application to the conductor shall comply with the requirements specified for cross-linked polyethylene (ASTM D-2655-80).

4.4 The insulation of the finished conductor before cabling shall withstand without break down the application of a 60 Hertz or 3000 Hertz, 7500 volt essentially sinusoidal spark test potential (RMS) in accordance with the method and using equipment specified in Underwriters Laboratories,Inc. Standard UL 1581.

5. INSULATION COLOR CODING

5.1 The insulation shall be colored BLACK .

6. IDENTIFICATION

Surface printed on the outer tube indicating the manufacturer, the year of manufacture, the IMSA Specification number and the voltage rating of the cable. The above information shall be applied every two feet (.61 M) or less.

7. ENCASING TUBE

7.1 The encasing tube may be either polyvinyl chloride or polyethylene compound.

7.2 The polyvinyl chloride shall comply with ASTM D-2220.

7.3 The polyethylene compound shall comply with ASTM D-1248 for Type III, Class C, Grade P33.

7.4 The encasing tube shall conform to the dimensions as specified in Table 7.4.

TABLE 7.4

mils(mm)	Mils(mm)
Outside Diameter	250(6.25) +- 10 (.254)
Inside Diameter	190(4.83) +- 10 (.254)
Wall Thickness	30(.762) +- 5 (.130)

8. PACKING AND MARKING FOR SHIPMENT

Reels shall be substantially constructed and in good condition with drum diameters sufficient to prevent damage to the wire shipped on it. The wire shall be suitably protected. Each end of the wire shall be available for testing, properly sealed and protected against injury. Each reel shall be plainly and permanently marked with the manufacturer's full description of the wire, giving the type and length of wire on the reel, the number and size of the conductor in the wire and the voltage rating.

9. SAMPLING, INSPECTION AND ACCEPTANCE

9.1 General

A. Inspection and tests shall be made prior to shipment and at the place of manufacture.

B. The manufacturer shall furnish the purchaser in suitable form a certified report of the test made on the cable to show compliance with this specification.

C. If the purchaser prefers factory inspection by his own inspector, this shall be indicated by the purchaser when placing the order and the manufacturer shall notify the purchaser sufficiently in advance of the completion of the wire to permit arrangement for the purchaser's representative to be present at the inspection.

D. The manufacturer shall afford the inspector, without charge, all reasonable facilities to satisfy him that the wire is being furnished in accordance with this specification.

E. The purchaser, at his option, may make various tests on samples in his own laboratory or elsewhere, but such tests shall be made at the expense of the purchaser.

9.2 Tests

A. Tests on Finished Individual Conductors - Each finished conductor shall meet the spark test requirement of paragraph 4.4 as soon as possible. All spark test failures shall be repaired.

B. Sample Tests - One sample for establishing conformity to this specification shall be taken from each 10,000 feet (3048 M) or fraction thereof, of each type and size of finished wire except that for physical dimensions and visual inspection a sample shall be taken from each reel. In case that these samples fail to meet the requirement of this specification, two additional samples shall be selected from new wire lengths and the lot shall be accepted if retests are both satisfactory. However, in case of any failure on the retest, the lot shall be rejected. The manufacturer may re-examine rejected material and submit it for re-inspection at his option.

10. GUARANTEE

The manufacturer of wire under this specification shall agree to replacement of any length of wire found to be defective in workmanship or material within one year from the date of delivery to the user.

IMSA
SPEC. NO. 51-3
1997

INTERNATIONAL MUNICIPAL SIGNAL ASSOCIATION, INC.
SPECIFICATION No. 51-3 1997
CROSS-LINKED POLYETHYLENE INSULATION LOOP DETECTOR WIRE

1. SCOPE

This specification covers cross-linked polyethylene insulated loop detector wire rated 600 volts for use in saw cuts as an inductance loop detector or in conduit as a lead-in wire.

2. GENERAL CONSTRUCTION

Wire under this specification shall be composed of a stranded copper conductor insulated by a cross-linked polyethylene compound.

3. CONDUCTOR

3.1 The conductors shall be copper and shall, before insulating, conform to the requirements of ASTM Designation B-3, latest revision, except that requirements for dimension and permissible variations are not applicable.

3.2 The conductor shall be stranded unless otherwise specified by the purchaser.

3.3 The stranded conductor may be either concentric or bunch stranding and shall conform to the physical requirements specified in ASTM Designation B-8, latest revision, for concentric stranding or ASTM Designation B-174, latest revision, for bunch stranding except that requirements for dimension and permissible variations are not * applicable.

3.4 The size of the conductor shall be specified by the purchaser.

3.5 The finished cable must meet the conductor direct current resistance (DCR) requirements as specified in Table 3.1 using the schedule for establishing maximum DCR per Table 3.2 when tested in accordance with Underwriters Laboratories, Inc. Standard U L 1581, Method 220.

TABLE 3.1.1
NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km)
AT 20 degree C (68 F) OF SOLID CONDUCTOR

Conductor Size, AWG	Solid Copper Uncoated		Coated	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
22	16.5	54.14	17.2	56.43
20	10.3	33.79	10.7	35.11
19	8.20	26.90	8.52	27.95
18	6.51	21.36	6.76	22.18
16	4.10	13.45	4.26	13.98
14	2.57	8.43	2.67	8.76
12	1.62	5.31	1.68	5.51
10	1.02	3.35	1.06	3.48
8	0.640	2.10	0.659	2.16

TABLE 3.1.2
NOMINAL D C RESISTANCE IN OHMS/1000 FT (OHMS/Km)
AT 20 degree C (68 F) OF STRANDED CONDUCTOR

Conductor Size, AWG	Stranded Copper Uncoated [B,C,D]		Coated B		Coated C	
	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km	Ohms/ 1000 ft	Ohms/ Km
22	16.7	54.79	17.9	58.73	---	---
20	10.5	34.45	11.1	36.42	---	---
19	8.33	27.33	8.83	28.97	---	---
18	6.67	21.38	7.07	23.20	---	---
16	4.18	13.71	4.43	14.53	---	---
14	2.63	8.63	2.73	8.96	2.79	9.15
12	1.66	5.45	1.72	5.64	1.75	5.74
10	1.04	3.41	1.08	3.54	---	---
8	0.652	2.14	0.678	2.22	---	---

TABLE 3.2
SCHEDULE FOR ESTABLISHING MAXIMUM D C RESISTANCE
PER UNIT LENGTH OF COMPLETED CABLE

Cables with Conductors of Table 3.1

Cable Type	Maximum D C Resistance
Single conductor	Table 3.1 Value plus 2 %
Multiple Conductor Cables and Twisted	Table 3.1 value plus 2 % plus one of the following:
Assemblies of single conductor cables	2 % - One Layer of Conductors (R Max = R x 1.02 x 1.02) 3 % - More than one layer of conductors (R Max = R x 1.02 x 1.03) 4 % - Pairs or other precabled units (R Max = R x 1.02 x 1.04)

4. INSULATION

4.1 The insulating compound shall be cross-linked polyethylene (ASTM D-2655-80)

4.2 The insulation shall be applied concentrically about the conductor. The thickness of the insulation shall be not less than that specified in Table 4.2. The method of measurement and the apparatus used shall be in accordance with Underwriters Laboratories, Inc. Standard UL 1581.

TABLE 4.2
INSULATION THICKNESS

Conductor Size, AWG	Minimum Acceptable Average Thickness	Minimum Acceptable Thickness at any point
14-10	30 mils(.76 mm)	26 mils(.66 mm)
8	45 mils(1.14 mm)	40 mils(1.02 mm)

4.3 The insulation after application to the conductor shall comply with requirements specified for cross-linked thermosetting polyethylene (ASTM D2655-80).

4.4 The insulation of the finished conductor before the jacket is applied shall withstand without break down the application of a 60 or 3000 Hertz, 7500 volt essentially sinusoidal spark test potential (RMS) in accordance with the method and using equipment specified in Underwriters Laboratories, Inc. Standard UL 1581.

5. INSULATION COLOR CODING

5.1 The insulation shall be colored black.

6. IDENTIFICATION

Each shipping length of wire shall show the name of the manufacturer, the year of manufacture, the IMSA Specification and the voltage Rating of the cable. The above information shall be applied every two feet (.61 M) or less to the outer surface of the jacket by indent or surface printing.

7. PACKING AND MARKING FOR SHIPMENT

Reels shall be substantially constructed and in good condition with drum diameters sufficient to prevent damage to the wire shipped on it. The wire shall be suitably protected. Each end of the wire shall be available for testing, properly sealed and protected against injury. Each reel shall be plainly and permanently marked with the manufacturer's full description of the wire, giving the type and length of wire on the reel, the number and size of conductor in the wire and the Voltage Rating.

8. SAMPLING, INSPECTION AND ACCEPTANCE

8.1 General

A. Inspection and tests shall be made prior to shipment and at the place of manufacture.

B. The manufacturer shall furnish the purchaser in suitable form a certified report of the test made on the cable to show compliance with this specification.

C. If the purchaser prefers factory inspection by his own inspector, this shall be indicated by the purchaser when placing the order and the manufacturer shall notify the purchaser sufficiently in advance of the completion of the cable to permit arrangement for the purchaser's representative to be present at the inspection.

D. The manufacturer shall afford the inspector, without charge, all reasonable facilities to satisfy him the wire is being furnished in accordance with this specification.

E. The purchaser, at his option, may make various tests on samples in his own laboratory or elsewhere, but such tests shall be made at the expense of the purchaser.

8.2 Tests

A. Tests on Finished Individual Conductors - Each finished conductor shall meet the spark test requirement of paragraph 4.4 as soon as possible. All spark test failures shall be repaired.

B. Sample Tests - One sample for establishing conformity to this specification shall be taken from each 10,000 feet (3048 M) or fraction thereof, of each style and size of finished wire except that for physical dimensions and visual inspection a sample shall be taken from each reel. In case that these samples fail to meet the requirement of this specification, two additional samples shall be selected from new wire lengths and the lot shall be accepted if retests are both satisfactory. However, in case of any failure on the retest, the lot shall be rejected. The manufacturer may re-examine rejected material and submit it for re-inspection at his option.

9. GUARANTEE

The manufacturer of wire under this specification shall agree to replacement of any length of wire found to be defective in workmanship or material within one year from the date of delivery to the user.

ATTACHMENT C: SPECIAL TERMS & CONDITIONS
TRAFFIC SIGNAL WIRE

1. **CONTRACT PERFORMANCE TERM.** This is a requirements contract to provide the state with traffic signal wire for a period of three (3) years with (2) One-year options.

2. **QUANTITY.** The State does not guarantee to purchase any amount under this contract. Estimated contract amounts are for bidding purpose only and are not to be construed as a guarantee to purchase stated amount.

3. **NON-ASSIGNMENT.** The Contractor shall not sublet, assign or transfer any part of this contract without prior written approval from UDOT's Procurement Manager. The provision of monies due under this contract shall not be assignable without prior approval from UDOT's Procurement Manager.

4. **PACKAGING.** Packaged individually with correct part number/size on outside of package, do not band together. Ship on crate or pallet, depending on size of order. Keep wire separate as per type.

4. **INVOICING.** THE CONTRACT NUMBER AND ORDER NUMBER MUST APPEAR ON ALL INVOICES. BILLS OF LADING, PACKAGES AND ALL CORRESPONDENCE RELATING TO EACH ORDER AND DELIVERY. In the event the State is entitled to a cash discount, the period of computation shall commence on the delivery date or the date of a correct invoice, whichever is later. If an adjustment in payment is necessary due to damage, the cash discount period shall commence on the date final approval is authorized. The State reserves the right to adjust incorrect invoices.

   The Contractor shall submit invoices to:

   UTAH DEPARTMENT OF TRANSPORTATION
   4501 South 2700 West
   Box 141500
   Salt Lake City, Utah 84119.

   The State will remit payment by mail.

6. **PRICING.** The Contractor agrees prices on Traffic Wire in this contract shall be guaranteed for at least one (1) years. Any change request on prices must be made at least thirty (30) days prior to the requested effective date. Any such request must include sufficient documentation supporting this request. Requests for change on any pricing in this contract shall not be effective until it is approved by UDOT's Procurement Manager.

7. **DELIVERY.** The shipping terms on this contract are F.O.B. destination.

ATTACHMENT D: PRICING
TRAFFIC SIGNAL WIRE

	Reel Size (M = 1,000 ft.) +/- 10%					Net Price Per 1,000 ft. Will Call	Net Price Per 1,000 ft. Delivered
	1M	5M	10M	15M	20M		
2.1.1	X					**$ 485.00**	**$ 520.00**
2.1.2		X				**$ 175.00**	**$ 188.00**
2.1.3		X				**$ 175.00**	**$ 188.00**
2.1.4		X				**$ 235.00**	**$ 250.00**
2.1.5		X				**$ 370.00**	**$ 400.00**
2.1.6		X				**$ 95.00**	**$ 105.00**
2.1.7		X				**$ 52.00**	**$ 60.00**
2.1.8	X					**$ 260.00**	**$ 280.00**
2.1.8		X				**$ 230.00**	**$ 242.00**
2.1.8			X			**$ 230.00**	**$ 242.00**
2.1.9	X					**$ 350.00**	**$ 378.00**
2.1.9		X				**$ 308.00**	**$ 325.00**
2.1.9			X			**$ 308.00**	**$ 325.00**
2.1.10	X					**$ 520.00**	**$ 560.00**
2.1.10		X				**$ 460.00**	**$ 480.00**
2.1.10			X			**$ 460.00**	**$ 480.00**
2.1.11		X				**$ 683.00**	**$ 720.00**
2.1.12		X				**$1,021.00**	**$1,080.00**
2.1.13	X					**$ 180.00**	**$ 195.00**
2.1.13		X				**$ 180.00**	**$ 195.00**
2.1.13			X			**$ 180.00**	**$ 195.00**
2.1.13				X		**$ 180.00**	**$ 195.00**
2.1.13					X	**$ 180.00**	**$ 195.00**